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Beyond the orthodox/CAM dichotomy: Exploring therapeutic decision making, reasoning and practice in the therapeutic landscapes of elite sports medicine



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ABSTRACT

Elite athletes face extreme challenges to perform at peak levels. Acute and chronic musculoskeletal injuries are an occupational hazard while pressures to return to play post-injury are commonplace. Therapeutic options available to elite athletes range from novel 'cutting edge' biomedical therapies, established biomedical and surgical techniques, and physiotherapy, to a variety of non-orthodox therapies. Little is known about how different treatment options are selected, evaluated, nor how their uses are negotiated in practice.

We draw on data from interviews with 27 leading sports medicine physicians working in professional football and cycling in the UK, collected 2014–16. Using idea of the 'therapeutic landscape' as a conceptual frame, we discuss how non-orthodox tools, technologies and/or techniques enter the therapeutic landscape of elite sports medicine, and how the boundaries between orthodox and non-orthodox therapy are conceptualised and navigated by sports medicine practitioners.

The data provide a detailed and nuanced examination of heterogeneous therapeutic decision-making, reasoning and practice. Our data show that although the biomedical paradigm remains dominant, a wide range of non-orthodox therapies are frequently used, or authorised for use, by sports medicine practitioners, and this is achieved in complex and contested ways. Moreover, we situate debates around nonorthodox medicine practices in elite sports in ways that critically inform current theories on Complementary and Alternative Medicine (CAM)/biomedicine. We argue that existing theoretical concepts of medical pluralism, integration, diversity and hybridisation, which are used to explain CAMs through their relationships with biomedicine, do not adequately account for the multiplicity, complexity and contestation that characterise contemporary forms of CAM use in elite sport.

1. Introduction

The use of non-orthodox therapies by athletes is prevalent across the globe (Carter, 2010; Pike, 2005; Theberge, 2008; Bundon and Hurd Clarke, 2014; Yang et al., 2016). Healthcare professionals working with elite athletes tend to have access to a global healthcare market and are not therefore constrained by state sanctioned therapeutic approaches (Faulkner et al., 2017). This, added to the highly unusual set of pressures sports medicine practitioners face to repair injured bodies (Kimmerle et al., 2012), makes it an area ripe for exploration. However,

issues around when, why, and how non-orthodox therapies are utilised in the context of the profession of sports medicine have been neglected in the social sciences.

Unorthodox medical practices co-exist alongside biomedicine and even thrive in some areas such as football medicine (Carter, 2010; Faulkner et al., 2017; McNamee et al., 2018). Previous studies focusing on athletes indicate that non-orthodox therapies are used for a variety of interconnected reasons such as recovery from prolonged periods of injury or illness, and/or dissatisfaction with the perceived inadequacy of orthodox biomedical care, and/or pressure to accelerate return to

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play, and to enhance performance (Faulkner et al., 2017; Kimmerle et al., 2012; Pike, 2005; Theberge, 2008). The specific cultural contexts of care can also be an important factor influencing which therapeutic approaches are taken by athletes and to what degree (Yang et al., 2016). The popularity of Complementary and Alternative Medicine (CAM) among teammates and their availability within sports clubs can act to normalize their use (Bundon and Hurd Clarke, 2014). The majority of this research has sought to understand CAM use from athlete – patient perspectives. Yet, little is known about how sports medicine practitioners engage with the non-orthodox therapies and healing strategies that they encounter in their everyday practice. Equally obscure are the rationales for different treatment options: how they are selected, evaluated, negotiated and combined into therapeutic regimens within the landscape of elite sports medicine, where a plurality of therapeutic options exists.

The aim of this paper is to investigate how therapeutic decisions are made, in contexts where multiple healing systems are utilised to manage injury. We develop new ways of thinking about CAM that challenge the orthodox/non-orthodox distinction. We begin by outlining prevailing understandings of orthodox/non-orthodoxy in medicine. We discuss key social scientific concepts of “medical pluralism”, “integration”, “diversity” and “hybridisation” that have been applied to theorize different forms of healing systems and practices available to us, and the relationships between them. We propose that the concept of ‘therapeutic landscape’ although broader and more loosely defined than the foregoing concepts, is better placed to account for contemporary forms of CAM use and the porous boundaries we observe between different therapeutic approaches, tools, technologies and techniques in clinical practice.

1.1. (Non)orthodox medicine

Biomedicine, with its focus on the biological body and technoscientific practices of healing and repair (Clarke et al., 2010), is the dominant form of medical knowledge and practice across the developed world. Other systems of healing and therapy tend to fall under the broad umbrella of CAM. CAM therapies are based on divergent theories about the body, the causes of illness and mechanisms of healing. Thus, the CAM label can encompass a wide range of therapeutic approaches, products and practices, from acupuncture, homeopathy and herbal medicine to massage, reflexology and hypnotherapy. Some classifications also include prayer and spiritual healing (Ayers and Kronenfeld, 2010). CAM therapies may also be referred to as ‘non-orthodox’ to reflect their subordinate relationship with biomedicine as the orthodox or hegemonic form of medical knowledge in Western societies (Cant, 2009; Saks, 2015). Thus, references to non-orthodox healthcare could also encompass a wider range of technologies, techniques and practices than listed above – such as novel yet scientifically unproven medical therapeutics and surgical techniques, nutritional supplements and other foodstuffs as well as commercially available health tests and diagnostic devices.

Osteopathy and chiropractic notwithstanding, there is no professional statutory regulation of CAM treatments in the UK (Saks, 2015). Consequently, many non-orthodox therapies are unregulated. Lack of state endorsement is another means by which orthodox and non-orthodox medicine are bifurcated (Saks, 2003), as biomedical approaches dominate provision via National Health Care systems, with CAM often regarded as an “individual consumptive choice” (Ning, 2018). Additionally, non-orthodox therapies can be demarcated from orthodox medicine based on lack of an established scientific evidence base for their utility, safety or efficacy. Nevertheless, there are notable exceptions such as acupuncture, which has been the subject of randomised controlled trials with an emerging scientific evidence base for its efficacy in pain management. The existence of (at least some) scientific evidence assists in the legitimisation process of complementary medicine within the dominant biomedical paradigm, but also contributes to the

blurring of what constitutes biomedicine and its alternatives (Polich et al., 2010). Despite the dominance of the paradigm, the boundaries between perceptions of legitimate biomedical therapies and non-orthodox ones are fluid, shifting in response to developments in culture, values, knowledge and practice, and are subject to challenge (Naraindas et al., 2014).

1.2. CAM theory

Several different concepts can help us to understand the use of non-orthodox therapies in relation to biomedicine. Undoubtedly, the most well known of these is medical pluralism or pluralisation – which can be used to explain how multiple and distinct healing modalities and systems of knowledge exist simultaneously and can be chosen as alternatives to one another (Cant and Sharma, 1999). The concept has been fruitful in furthering our understanding of variability of healing practices and contexts. Never-the-less, empirical studies have shown how processes of pluralisation are messy in practice; divergent therapies are often not selected as alternatives to one another, nor as alternatives to biomedicine, but rather used in combination. The notion that individuals choose between competing systems is simplistic.

Our understanding of medical pluralisation, specifically in relation to CAM and biomedicine, has been advanced through the concept of ‘integration’. Typically this is through the assimilation of CAM into biomedical healthcare regimens, the mechanisms through which it is managed, and the relationships clinicians have with CAM care (Broom and Tovey, 2007; Cant et al., 2011; García-Escamilla et al., 2016). Within this conceptualization, non-orthodox therapies are characteristically viewed as ‘complementary’ to biomedical regimes, while remaining under the control of orthodox healthcare practitioners (Wiese et al., 2010). One important criticism of this configuration stems from Science and Technology Studies where a sustained body of scholarship has shown how biomedicine is not homogeneous, but is better viewed as multiple, fragmented, fluid, and contested (Mol, 2002). Therefore, holding biomedicine and its alternatives up as two discrete entities represents a false dichotomy (Hsu, 2008; Ning, 2013). Consequently, within sociology, it is now more common to conceptualise healing practices in terms of diversity (Parkin, 2013) which accounts for borrowing and exchange between different medical systems of knowledge and practice – or hybridity (Dew et al., 2014) – to capture the diverse ways through which healing practices are assembled by users in the search for effective remedies or symptom management (Thomas and Coleman, 2004).

Our analysis of the CAM literature, therefore, yields a conceptual typology spanning the separate alternatives of pluralisation on one hand to the ‘mix and match’ of hybridity/diversity on the other. The typology is useful in being more specific than the well-known concept of ‘medical pluralism’ *per se* (e.g. Cant, 2009) that elides these distinctions.

In addition, theoretical developments in medical anthropology also move beyond this conceptual frame. For example, Hörbst and Wolf (2014) propose the concept of ‘medicoscapes’ to account for the blurring of medical cultures in an increasingly globalised world, and the ways in which knowledges, artefacts and practices together with associated policies and power relations come together in local contexts. Relatedly, Hsu (2008) introduces the idea of ‘medical landscapes’ as way to conceptualise medical pluralism beyond the view of medical cultures as clearly bounded entities centred around a culturally adept healer. Instead, she proposes that, in thinking more broadly about the medical landscape and its contours and features, we might conceptualise how particular configurations of people, objects and knowledge, along with their social, economic and political entanglements, come together in a specific locale.

Our aim throughout this paper is to attend to therapeutic decision-making, therapeutic reasoning and therapeutic practices developed by sports medicine practitioners in the context of elite sport injury.

Building on anthropological concepts of ‘medicoscapes’ (Hörbst and Wolf, 2014) and ‘medical landscapes’ (Hsu, 2008) and bringing this together with work on boundaries between orthodox and non-orthodox medicine (Ning, 2013; Ning, 2018; Naraindas et al., 2014), our analysis in this paper develops the idea of ‘therapeutic landscapes’.

The therapeutic landscape concept has its roots in health geography where it is typically applied to study how certain physical places come to be perceived and experienced as therapeutic, emphasising the connection between environment and health (Gesler, 1992). The concept is widely regarded as a useful heuristic to better understand the ‘characteristics of place’ and how these contribute towards making places and spaces health-enabling as in, for example, green spaces, hospital wards and everyday places such as the home as sites of healing (Bell et al., 2018). Since its original articulation, the concept has developed significantly within medical geography to “examine how therapeutic places and spaces work ... to maintain and promote health and well-being for different individuals and groups at different times” (Bell et al., 2018; p7). Bell et al. (2018) also note the potential value of the concept in accounting for cross-cultural differences in the expectations, norms, narratives and understandings of health and wellbeing, and how these can shape one's affective experiences of particular spaces.

Beyond health geography, the concept has been applied in different fields including sociology, the arts, nursing, anthropology and gerontology (Bell et al., 2018; Cutchin et al., 2010). In sociology, a small number of studies have applied this concept to analyse physical spaces of healing, for example healthcare buildings (Martin et al., 2015), as well as the role of relational networks and notions of pluralism within these landscapes of healing (Van Ingen, 2004). In their study on breast cancer patients, English et al. (2008) explore how different environments contribute to the healing process and can act to shape experiences of healing. Their work identifies multiple ‘landscapes of healing’ – the individual body, the home, local communities, interactions with friends, natural environments as well as locations of formal and alternative healthcare – demonstrating how these physical and relational landscapes interact and overlap in recovery from illness.

Following Hsu (2008) we argue that the landscape metaphor is a useful way to think about medicine and healthcare and gives us a tool to conceptualise how configurations of people, objects and knowledge, along with their social, economic and political entanglements, come together and operate together in a specific locale. Inspired by work in medical sociology on therapeutic plurality (Broom and Tovey, 2007) and in medical anthropology on medicoscapes (Hörbst and Wolf, 2014) medical landscapes (Hsu, 2008) and the porous boundaries between orthodox and non-orthodox medicine (Ning, 2013; Ning, 2018; Naraindas et al., 2014), we propose to develop the concept of therapeutic landscapes further for application within medical sociology. To do this, we propose a shift in focus away from ‘place’ to ‘space’ and further towards the networks of things, people, knowledge and so on, that come together in particular spaces and places to impact on health and healing. Following Gieryn (2000), Martin et al. (2015) argue that “place becomes space when it is filled up by people, practices, objects and representations”. In doing so we present a more robust definition of therapeutic landscapes for medical sociology as *spaces where multiple healing knowledges, therapies, artefacts, symbols, practices and people can come together and interact in various and shifting ways*.

Instead of focusing on ‘medicine’, one particular therapy or set of relationships, the vantage point we have taken allows us to explore therapeutic decision-making, therapeutic reasoning and use in practice in regard to multiple therapies and therapeutic approaches that span the orthodox/non-orthodox divide.

Specifically, framing our research questions in terms of the therapeutic landscape as discussed above, we ask:

1. What factors influence elite sports medicine practitioner's decisions to use non-orthodox therapies in the treatment of sports injuries?;
2. How are the boundaries between orthodox and non-orthodox

- therapy conceptualised by sports medicine practitioners?; and
3. How are non-orthodox therapies being used in practice?

2. Methods and data collection

Data are drawn from in-depth qualitative interviews with 27 leading sports medicine practitioners (9 medical doctors, 11 physiotherapists and 7 orthopaedic surgeons) with experience of working in elite football and cycling in the UK. These were collected as part of a larger study which set out to examine the intersections between medicine, technology and elite sport, and were conducted between 2014 and 2016. Ethical approval was obtained from the University of Sussex, UK.

We focus on elite football and cycling as these are two sports organised in very different ways. Elite football is overwhelmingly privately funded whereas cycling is supported through public finance together with some private funding in the UK, a key difference that impacts upon the nature and composition of medical teams. Both sports have high public visibility, prominence of musculoskeletal injuries, and dominance of biomedicine (See Faulkner et al., 2017). Sports medicine practitioners often work across different sports and relate to ‘sports medicine’ as a specialty, hence we mainly refer to ‘elite sports medicine’ rather than cycling medicine or football medicine. We focus specifically on the management of musculoskeletal injuries within these sports. Musculoskeletal injuries are prominent amongst high performance sports players (Jacobsson et al., 2013) and therefore a topic all of our participants were experienced in managing and able to talk about with ease. We selected participants on the basis that they: (a) were or had previously been a core member of a medical team in elite football or cycling in the UK; or (b) had experience of treating musculoskeletal injuries incurred by elite footballers and/or cyclists; or (c) were medical officers in sports governing bodies/other sports specific organisations, with particular interests in football and cycling.

Semi-structured interviews were carried out by one or more of the research team at a place of the interviewee's choosing. Topics covered included views on particular novel and established treatments for musculoskeletal injuries, including specific treatment pathways for particular injuries and informal healing practices that they considered or were engaged in. Interviews lasted for an hour on average and were audio recorded and transcribed. Analysis of the transcripts was facilitated using the qualitative data analysis software package NVivo. We took an inductive thematic approach to data analysis (Braun and Clarke, 2012) which involved reading and re-reading the transcripts, grouping data extracts together based on their main topics and issues, developing a coding frame based on these and connecting congruent codes together to generate themes based on patterns of meaning across the dataset. We developed an interpretative analysis of views and experiences of non-orthodox healing practices, and accounts of medical decision-making and discussed these in relation to broader theoretical and conceptual issues outlined earlier.

Next we discuss some of the factors influencing elite sports medicine practitioner's decisions to use non-orthodox therapies in the treatment of sports injuries. Our data illustrate the porous boundaries between CAM and biomedicine in elite sports. We argue that non-orthodox therapies are viewed as credible therapeutic options for injuries in multiple ways that cannot be easily accounted for by any single model of the CAM/orthodox medicine relationship.

3. Findings

Our data indicate that a wide spectrum of therapies and practices for treating musculoskeletal injuries fall within the therapeutic landscape of sports medicine. The sports medicine practitioners we interviewed discussed established biomedical and surgical techniques, novel biological therapeutics, ‘exercise as medicine’ (including yoga), physiotherapy techniques such as deep tissue massage, hydrotherapy and heat/ice treatments. Additionally, they spoke about a large number of

treatments, techniques and/or healing approaches that could be categorized as non-orthodox therapies. These included: acupuncture, electrical stimulation (EPI), chiropractic, cupping, homeopathy, injections of animal blood products (actovegin and placenta treatments), osteopathy, ozone therapy, prolotherapy, reflexology, reiki and forms of traditional and spiritual healing. It is how sports medicine practitioners engage with this latter group of therapies that is the focus of our analysis. In what follows, we analyse (1) the treatment decisions (2) therapeutic reasoning and (3) therapeutic practices developed by sports medicine practitioners within the therapeutic landscapes of elite sports medicine. Specifically, we pay critical attention to how the boundaries between CAMs and biomedicine are conceptualised and upheld and transgressed.

3.1. Therapeutic decision –making: trends, friends and influences

One of the pervasive means by which non-orthodox therapies can come into the field of elite sports medicine is as fads and fashions. These are often led by charismatic practitioners or ‘gurus’ who make a name for themselves in a particular sport or country by treating high profile athletes with a novel therapy or approach and gaining media coverage of their apparent successes.

An example is in the use of animal blood products - in the form of Actovegin (made from an ultra-filtrated extract of calf's blood) or horse placenta - as treatments for muscle injuries and/or as a way to accelerate healing. These were prevalent, albeit controversial, potential therapies discussed by participants. Both can be considered unorthodox given their limited scientific evidence base, and both are unlicensed and unregulated. Treatment protocols for these therapies are veiled in secrecy and evidence for efficacy is typically presented in the form of individual testimonies (often from high profile athletes) and unverified case studies. The use of these two therapies can be linked to specific individuals who have attained a guru-like status within sports medicine, popularising their therapeutic approach, which promises a speedy recovery from injury and return to play. Actovegin was popularised by the German sports doctor Dr. Hans-Wilhelm Muller-Wohlfahrt, Team Physician for the German Football National Team and Bayern Munich football club, while Serbian physiotherapist Mariana Kovacevic has become known as the ‘placenta doctor’ in the British press after reportedly treating a string of high profile professional football players. The charisma of the practitioner, the power of their personality and their ability to connect with athlete-patients and give them hope were all discussed as important factors contributing to the practitioner and the therapies' popularity.

Several of our participants said that they did or had used Actovegin to treat muscle strains or hamstring injuries, and a number of these individuals had had direct contact with Muller-Wohlfahrt. All were either physiotherapists or sports doctors working within elite football. For example:

In terms of Actovegin [...] I ran a workshop about four or five years ago where we got some leading practitioners, for example, Muller- Wohlfahrt from Germany, who was the pioneer of this work, came over and spent two days with us to talk about what he does [...]he was a fascinating person in that, I suppose there was a lot of artistry, a lot of, kind of, personal believe in there. [...] It seemed very out there as what you might call a 'mainstream', whatever that is, practice. (I27, Medical doctor)

Others, by contrast had either not heard of the substance or did not have access to it:

Actovegin - never used because I haven't been able to get hold of it. (I23, Medical doctor)

Of particular significance was the importance given by our respondents to the athlete-patient's views and their belief systems in therapeutic decision-making. It was apparent that athlete-patients are considered to be important *assets*, and that they have a voice that is

heard in the therapeutic encounter (Theberge, 2008). As a physiotherapist explains in the data extract below, often athlete –patients request particular therapies, sometimes they have tried these before and had success, other times preference for therapies is linked to cultural belief systems to do with healing and performance:

If I want to, say, manipulate a player's neck and culturally he does not believe in it and it isn't accepted, come hell or high water you're not going to make him right [...] Players come in, some hate it "I don't want acupuncture; no, this is what I need; I definitely need this ..." so, we listen to it [...] (I12, Physiotherapist)

In sports medicine, medical teams are typically multidisciplinary and can include sports physicians, physiotherapists, orthopaedic surgeons, and physiologists, ‘alternative’ practitioners such as chiropractors and osteopaths as well as ‘non-professionals’ such as trainers and masseurs. In our study it was always a physiotherapist or medical doctor leading the team although others could be included in the decision making process for particular injuries (eg. Orthopaedic surgeons) or for specific patients (e.g. reflexologists, chiropractors). As can be seen in the next data extract, it was often the case that someone within the local network – maybe a coach or perhaps an athlete-patient themselves - has seen or heard of a novel or non-orthodox therapy or practitioner via one of their contacts in the wider network and suggested this for a specific athlete-patient:

You're kind of gathering evidence from different sources, and certain doctors, physios, sports scientists [...] Sometimes the players will come to in [...] "I'm doing this because my mate's done this and I think this is great." Or the coaches will for instance say, "I really want this player back. I know my mate at such and such a club has been using this machine on all his players and I want you to use this." (I10, Medical doctor)

Within these networks, the strongest influence on therapeutic decision making might come from one particular practitioner, influenced by their professional background and training. Nevertheless, it was apparent how, therapeutic decisions were often influenced from a range of healthcare, and non-healthcare actors. On occasions even the views of managers, agents, coaches, sports scientists, trainers, and sometimes parents (for younger athlete-patients) contributed to therapeutic decision – making though in the elite levels of football at least, there is survey evidence that managers and coaches have less influence than they used to (Malcolm et al, 2015).

3.2. Therapeutic reasoning: epistemology and ‘evidentiality’

Our participants readily acknowledged that many therapies they used could be classed as novel, non- orthodox or ‘not mainstream’. A small number of participants expressed openness to alternative epistemologies of healing, acknowledging that ‘medicine is not a precise science’ (I7) and that it is not always necessary to know how something works, it is enough that it does work:

I've often said why does it need to be peer reviewed literature, and actually be proven in a research study to say it's working. I know it's working. My players are feeling better [...] there's techniques out there like Bowen Technique, there's Reiki, all these kinds of techniques that are out there, that people are doing through alternative medicine that are having good results with their clients. And there is no reason why they can't be used in a football setting. (I4, Physiotherapist)

However, for most, which is likely a reflection of their professional backgrounds and hierarchies, biomedicine retained its hegemonic status. Consequently, some of the healing techniques or approaches (e.g. Osteopathy, Chiropractic) were referred to as ‘fringe’ therapies and non-orthodox therapies tended to be ‘othered’ in relation to biomedicine. We can see in our data how, conceptually speaking, these therapies were demarcated from biomedical therapies, usually with some discussion of their scientific evidence base, or lack thereof:

Prolotherapy [is] often championed by sort of osteopaths and the chiropractors, a group who are not particularly well known for their clinical reasoning and scientific, evidence-based practice. And I think physiotherapy as a body are quite prepared to admit that a lot of what they do is not evidence-based practice [...] but they are embracing evidence-based practice with a vengeance and there's a lot of pressure for the CSP (Chartered Society of Physiotherapists) to kick out craniosacral osteopathy and those sort of things. (I25, Orthopaedic surgeon)

One of the main reasons practitioners gave for not using (particular) non-orthodox therapies was lack of scientific evidence base for their utility. The absence of scientific evidence was used to bifurcate non-orthodox from orthodox (or 'evidence based medicine') techniques or practices, at the same time marking those without an evidence base as 'risky'. This was not only so in regard to potential health and performance deficits, but also in terms of reputational damage:

I can remember a few years ago that extraordinary woman from the Eastern Bloc doing the placenta stuff. Now, are you willing to risk an £80 million player with that sort of technology that has no basis of any evidence at all and, with all the other ramifications that would be introduced, you know, she's doing it in a block of flats in an Eastern Bloc country with no sterile environment [...] you let all your players do all these weird and wonderful things, you're opening yourself up to ridicule really. (I6, Physiotherapist)

Interestingly, for others, allusion to the 'evidence' for a particular therapy amounted to an assertion that a scientific evidence base is emerging for the therapeutic modality. Indeed, participants described how they were or had been involved in scientific research on specific therapies in an elite sport population (e.g. Actovegin, Acupuncture, shockwave therapy) in attempts to align their use of a particular therapy with a scientific paradigm, thus blurring the boundaries between biomedicine and its alternatives. A clear example is shown below where a physiotherapist is talking about how they attempted to build an evidence base to justify integration of Actovegin into their therapeutic practice:

I4: We did a study [which] showed that we were drastically reducing the amount of time lost for [specific injuries] using Actovegin [...] anybody who has a [specific injury] we tend to use, doesn't matter whether it's one of the young pros or whether it's one of the senior pros ... his wages would not affect that decision on that. Interviewer: And that expresses the confidence you have in it? I4: Yes. (I4, Physiotherapist)

Scientific evidence then can become an indicator of 'objectivity', an apparatus of governance that is used to confer legitimacy to the modality. For others, however, the lack of scientific research within an elite sports population was not considered problematic. Participants discussed the difficulties of conducting largescale studies within the elite athlete population. Doubts were raised whether large scale randomised controlled trials on non-athletic populations would effectively translate. Some were firmly of the opinion that in relation to elite sports, athletes were viewed as unique and extraordinary individuals, thus warranting an individual therapeutic approach. This can be seen the quotation below where the sports doctor adopts an integrated biomedical and homeopathic therapeutic regimen, justifying this through the uniqueness of the individual, thereby rendering the lack of scientific evidence for its use somewhat inconsequential. It is noteworthy that despite sanctioning and administering the therapy, the doctor still questions its physiological efficacy:

Traumeel I have used, particularly on a player who came to me who said, "I've got a minor muscle injury, can I have some Traumeel?" He'd had it before, he believed in it. I used to use it with him relatively regularly when he had grade one muscle injuries and he wanted to play with them. But interestingly, he'd had it mixed with a local anaesthetic and what I think he was doing was not feeling the small percentage of his muscle that was

a problem [...] He's physiologically a very strange individual. I wouldn't use it on anybody else. (I23, Medical doctor)

Yet, as our participants reminded us, evidence-based medicine is not comprised exclusively of randomised controlled trials, but also includes clinical judgement. In this regard, there is space for alternative forms of evidence to emerge, and to be valued, including recommendations and testimonies from other practitioners in the field, as well as clinician's own observations and experiences. For instance, our interviewees frequently told us how upon hearing of the successes of a particular novel non-orthodox therapy, would contact the practitioner, observe their practice and share in their knowledge, often taking this as a base for their own experimentation. Thus, clinical expertise is built from experiential knowledge about what works for a particular type of patient and their injury. A result of this is that some sports, teams or clubs will end up using a particular therapy (or combinations of therapies) that they have found works for their patients despite a lack of scientific evidence for efficacy, whereas others have found no benefit and do not use it. Indeed, this aligns with other studies on CAMs which have found that clinical testimony of positive benefit to patients is a cornerstone of legitimacy when scientific evidence is lacking (Willis and White, 2017). We can see, then, what have been termed 'communities of practice' (Wenger, 1998) – as in groups of people who share a common goal, interacting with and learning from one another – operating within sports medicine generally, and in the case of the examples above operating on a more local level within sports medicine/healthcare teams.

3.3. Therapeutic practice: adapting, appealing and controlling

A consequence of the seemingly *ad hoc* adoption and combination of various therapeutic approaches influenced by athlete – patient belief systems, cultures, peer networks and local pressures is the relative absence of standard protocols for how non-orthodox therapies should be assimilated, incorporated or mixed into therapeutic regimes when compared to other areas of medicine. Some practitioners described taking an almost pluralistic approach (Cant and Sharma, 1999) turning to specific therapies in cases of prolonged injury for example, when orthodox medical approaches were lacking or so far ineffectual, where others described adopting more of a mix and match approach where several types of therapy could become 'hybridised' (Dew et al., 2014) in clinical practice. It is interesting to note that pluralistic, integrative and hybridised approaches to combining biomedicine and 'CAM' in clinical practice were described across the dataset and were not mutually exclusive of one another. Indeed, different approaches and rationales for using particular non-orthodox therapies were given by the same practitioner at different times.

Practitioners described their experimentation with various therapies as 'tinkering' (I4) or 'moulding and adapting' (I12) their therapeutic approach based on what was available, desirable and effective for the patient and practitioner at a particular time. It was clear that being able to offer multiple therapeutic options was important in the sports medicine field for several reasons. For example, such use might allow one to be seen as cutting edge; to make a name for oneself; or (crucially) to be seen to be proactive and 'doing something' in order to appease managers, athlete –patients, and agents, all of whom had various interests in the athletes' return to play (RTP) decisions. Time pressures on recovery mean that often there is the expectation that practitioners will use every tool at their disposal to facilitate RTP. Therefore, pushing the boundaries to enhance recovery time is routine healthcare in a way that it is not seen in other areas of medical practice. In the extract below a medical doctor who works with elite cyclists is talking about why he began using Traumeel¹ and when he might use it in his practice now:

¹ Traumeel is a homeopathic remedy, originating in Germany. Despite lack of consensus about its scientific evidence base it is a popular therapy and had been used by almost a third of the practising sports physicians we interviewed.

Traumeel was something in 2006, prior to (a) major games, that I was aware I'd have to consider giving because it was being widespread administered by Dr Müller-Wohlfahrt in Munich and at that stage many athletes were going over to Munich to have these injections. I met him on three occasions, and he told me he'd given over 10,000 injections of Traumeel without a single side-effect. When I researched it, it's in widespread use in Germany. It's not licensed in the UK. It's homeopathic, so it's 1 in 10,000 dilutions, isn't it, so it's meant to contain a single atom of arnica, calendula, Echinacea and various other herbs, ...and I bought some and experimented a little bit with it and had some extremely good successes [...] I'd seen them given by UK Athletics doctors and spoke to doctors working in professional football before I did them myself and I probably wouldn't use it more than once a year at the moment. I've got one client I'm thinking of using it on at present, who's got lots of other issues we've corrected, but she's getting recurrent calf tightness for no obvious reason, despite multiple assessments, and if the latest plans don't work, she's training, but just not able to compete at her absolute maximum, that's the sort of time I might consider using it. [...] I would only use it in elite sport, I would never use it in an NHS setting (I42, Medical Doctor)

We can see in this case how therapeutic practice has been influenced by trends in the global field of sports medicine as well as communities of practice (Wenger, 1998) and personal networks (Nixon, 1993). Meeting with the 'guru', watching their practice, in addition to the testimony of others are taken as forms of evidence for its potential efficacy. Moreover, the lack of quick and effective biomedical treatments creates a space for the non-orthodox therapy to be incorporated into therapeutic regimens on an individual basis, driven by the focus of RTP.

It was common for practitioners to justify their stance of allowing, enabling or offering access to a particular non-orthodox therapy on the grounds that it would 'not do any harm' (nor violate anti-doping rules) to the patient. Many spoke about the emotional impact of non-orthodox therapies on the patient's recovery from injury, valuing these aspects of the healing process. It is clear that optimal recovery from injury was thought, importantly, to involve psychological as well as physical health where even small gains in RTP or performance could translate into big differences for elite athletes:

Some players like cupping for instance which I used to see those old-fashioned glass cups in the museum at [Hospital] and thought "how can anyone ever do that?" but cupping is not an unusual thing in clubs. [...] the difficulty is when you're talking about performance and sport everyone is looking for the small margin, for the minimal gain that you can get to make a difference. So, therefore, you are going to experiment and try anything in order to affect that, and most of that will be psychological, of course, rather than physical. (I13, Medical Doctor)

The allure of marginal gains ties into the atypical goals of sports medicine. We can see how healing can be decentred to make space for 'performance' (Kimmerle et al, 2012). The idea of 'competition readiness' is at the forefront of clinical practice as the costs to clubs and teams of athlete unavailability for selection is perceived to be high. In the quote below a physiotherapist justifies the use of a reflexologist to treat an athlete. We can see here how the different aspects of therapeutic decision-making and reasoning come together in clinical practice. The global nature of sports medicine is evident, as well as the influence of patient beliefs and role of non-medical staff in collective therapeutic decision-making. Here pluralism justifies alternative options when orthodox care has failed:

You would be amazed what influences a player's recovery most [...] We had a top [European] player, believed heavily in reflexology. Reflexology is a thing that at that time I wasn't that convinced did or didn't do anything. But, he believed in it [...] we were playing a major [tournament name] game and he picked up an injury [...] he had no chance of playing. And that night this guy flew in from [European country] to treat

him for two days. I was a young physiotherapist and I said to [the manager] "I'm not happy about this, I think it's wrong" but he turned to me he said "well, you've already told me he's got no chance with you, he thinks he's got an opportunity with him." (I7, Physiotherapist)

In these cases, non-orthodox therapies are often given a different role to biomedicine in the healing process, but a valued one nonetheless, considering their potential benefits in delivering those revered marginal gains in recovery and performance. It is interesting how the psychological aspects of healing were also used in other ways, as part of the craft of sports medicine. For instance, it was common for our participants to talk about their use of non-orthodox therapies as a form of control. For example, one physiotherapist talked about how they created bespoke and 'hybridised' therapeutic regimens for patients influenced by the latter's belief system, while also channelling all patients into the same rehabilitation programmes. In their view, the value of hybridising their therapeutic regime to incorporate non-orthodox therapies is in terms of getting athlete patients to 'buy in' or 'adhere' to biomedical treatment, rest and rehabilitation routines:

The same condition could be treated slightly differently but we then start channelling them into the rehab programmes that are identical. So, on the initial basis we say "okay, we will do your EPI [electrical stimulation] but then you've got to do my work, right?" "Yes, fine, as long as I get my EPI I'll do whatever you want". We do that and then they slowly say "hang on, your treatment actually works. I don't need the EPI anymore." (I12, Physiotherapist)

This view was shared by others who talked about using non-orthodox therapies as 'distraction techniques' or 'space fillers', ways to keep the patient occupied, to appear proactive, to appease demands of others, to be seen as doing something, whilst in reality securing time for the healing process. In these instances biomedicine retains its hegemonic position and CAM therapies, and the knowledge underpinning them, are subordinated.

Another way this can occur is through the reactive use of non-orthodox therapies as a strategy to retain control over the therapeutic regimen. In the contexts of elite sport medicine, the patient – practitioner relationship is not top-down since the patient (and their agent) might exercise considerable (economic) power. There is a constant threat that if not satisfied with the care that they receive (often promoted by their agent), athletes will go elsewhere to get the treatments they believe will assist swifter RTP. Practitioners spoke about multiple and heterogeneous therapeutic regimens within which they would offer selected non-orthodox therapies 'in house', receive training to administer non-orthodox themselves (e.g. acupuncture) or bring in specialised non-orthodox practitioners to provide a specific alternative therapy (e.g. reflexology, chiropractic) as a way to prevent their athlete patients from seeking out alternative therapies in an uninformed way. As one participant puts it:

If I have a player and I am offering him a treatment for something, in some respects, what it does is it stops him going and getting a treatment from somewhere else because he hasn't been offered it by me. And I would rather control the degree of mismanagement. (I23, Medical Doctor).

The role non-orthodox therapies play in therapeutic regimens is therefore integral to the successful practice of sports medicine, even if conceptually they may continue to be othered, regarded as useful adjuncts or 'distractions' but not alternatives to real biomedical treatments, or rest for recovery.

4. Discussion: beyond the orthodox/non-orthodox dichotomy in elite sports medicine

The overarching aim of this paper was to investigate how therapeutic decisions are made, reasoned and enacted in a context where

multiple healing systems are drawn from to manage injury. Our empirical data highlight the porous boundaries between CAM and biomedicine in the practice of elite sports medicine where a wide range of complementary, alternative or non-orthodox therapeutic modalities co-exist and are blended together in various combinations. We have shown how non-orthodox therapies are variously used instead of, alongside, incorporated into, and/or hybridised with novel and established biomedical techniques and treatments in multiple ways (Gale, 2014; Dew et al., 2014; Faulkner et al., 2017; McNamee et al., 2018; Cant and Sharma, 1999; Parkin, 2013; Wiese et al., 2010). In our research, non-orthodox therapies were viewed as credible therapeutic options for injuries in multiple ways that cannot be easily accounted for by any single model of the CAM/orthodox medicine relationship. We developed the concept of therapeutic landscape to advance beyond the existing theories of CAM/biomedicine relations.

The landscape of elite sports medicine is an atypical healthcare environment where backgrounds, cultures, beliefs of medical practitioners, coaches, managers and athlete-patients coalesce in practice. Physicians working in sport have traditionally been innovative if not idiosyncratic in their practices, but sports medicine practitioners in many sports have now become more specialised and their occupational positions at elite sports level have become more stable (Malcolm et al., 2015), and hence their authority vis-à-vis managers and coaches has increased. At the same time, they have to contend, as other medical specialties do, with the advent of evidence-based medicine. Elite sport is a high -pressured environment where the risk of injury is high as is the pressure to recover from injury quickly, with the focus of intervention on repairing impaired performance (Kimmerle et al., 2012) in addition to healing the body. Elite sport medicine is also a therapeutic landscape characterised by clinical uncertainty in many injuries, where, as previous studies have shown, alternative approaches to injury management can flourish (Malcolm, 2009). Reflecting on our data, we can identify several aspects of the sports medicine landscape as a niche therapeutic space that are central to creating the underlying conditions of possibility for heterogeneous non-orthodox therapy utilisation. We summarise these as 'opportunity', 'variegation', and 'flexible control'.

In terms of opportunity, our data illustrate that elite sports medicine can certainly be viewed as a privileged space where practitioners have opportunity to acquire knowledge about a wide range of non-orthodox therapies and practices, which is part and parcel of the globally networked world they inhabit. Clubs and teams with high levels of financial capital have access to the global healthcare market, with an ever-growing assortment of technologies, tools and practitioners at their disposal: cross-border health travel is common, and procurement of international services is standard. Indeed, this is made even more possible by the lack of regulation for most 'CAM' therapies and in some cases, the minimal training required to become a licensed practitioner. We found a high level of heterogeneity in the adoption and rejection of non-orthodox therapies as well as in patterns of use and methods of administration. Personal and professional networks are a powerful mediator of healthcare (Nixon, 1993; Faulkner et al., 2017; McNamee et al., 2018) facilitating access to novel therapies and techniques and 'guru' practitioners. This heterogeneity is reflected in the relative absence of standard protocols for how non-orthodox therapies should be assimilated, incorporated or mixed into therapeutic regimes when compared to other areas of medicine such as cancer treatment (Broom and Tovey, 2007).

A second key underlying condition shaping the therapeutic landscape is variegation. Widely regarded as an emerging specialism in the UK, sports medicine attracts practitioners from a broad range of different professional disciplines. In the era of globalisation - seen in its extreme form in elite sports - both medical teams and sports teams are typically formed of individuals from different geographical and cultural backgrounds, bringing together culturally diverse experiences, practices, systems of knowledge and ideas about what 'conventional' or 'orthodox' medicine is. Consequently, the organisation and culture of

medical teams can vary significantly both within and between sports, and this can have significant impact on how injuries come to be managed (Carter, 2010). Our data demonstrate how therapeutic decision-making in these settings is often a collective endeavor. Rather than a traditional hierarchical dyadic doctor -patient relationship where a medical doctor is responsible for therapeutic decisions, the elite sports medicine context sees decisions made by medical teams that can comprise a variety of individuals including specialised sports physicians, medical doctors, physiotherapists and surgeons. The variable social organisation of sports medicine and treatment cultures operating within particular sports and specific teams or clubs clearly has an influential role, enabling and normalising the use of particular non-orthodox therapies in these settings (Bundon and Hurd Clarke, 2014). We found micro-cultures or 'communities of practice' (Wenger, 1998) within sports clubs or teams bound by their shared interest and expertise, engaging in a process of collective learning, sharing information and a repertoire of practices, and this shaped the use of nonorthodox (as well as orthodox) practices.

Additionally, we have observed the litany of other voices in therapeutic decision-making, including those of managers, agents, coaches, sponsors, non-medical trainers and sports scientists. Our data indicate that the athlete-patient, and in particular, their views and belief systems, are central to the decision making process. This diversity underpins a requirement for negotiation in sports medicine and can result in ongoing tensions over therapeutic decisions between different groups of health care providers (Theberge, 2008; Faulkner et al., 2017) and their patients. These conceptual tensions were revealed in practice in what we have described as therapeutic reasoning, where discussions around the legitimacy, or biological efficacy, of particular non-orthodox therapies drew on assessments of their scientific evidence base. It is interesting to note the absence from our participants' accounts of any attention to the formal state regulation of non-orthodox therapies. Instead of legitimacy provided by such regulation, we see recourse to the softer standards of 'EBM'-style evidence, clinical experience and testimony of others in their local and wider networks as the form of legitimisation that matters - to some extent - to practitioners in elite sports medicine.

The third element shaping the use/non-use of non-orthodox therapy in the therapeutic landscape that we have illustrated, we refer to as flexible control. For non-orthodox therapies to become a credible therapeutic option in treating elite athletes, sports physicians had to be flexible in their therapeutic approach, that is open to considering therapies falling outside their disciplinary norms, experiential knowledge and understanding. This flexibility sometimes encompassed an avowed belief in subjective psychological benefits of non-orthodox therapies. In addition, some of the sports physicians we spoke to alluded to how they might endorse the use of these therapies, even if they did not accept their objective utility. In these instances, non-orthodox therapies were thought of as harmless or even akin to placebo therapies that made patients feel better. Further, our data show how CAM therapies were often used as mechanisms of control over the therapeutic relationship, preventing athlete-patients seeking alternative therapies from elsewhere as global consumers of medicine (Ning, 2013).

In terms of therapeutic reasoning, we can see how biomedicine retains its conceptual hegemony as the dominant form of healing knowledge, and 'scientific evidence' - or lack thereof - is used to divide 'legitimate' therapies from alternatives, meaning that CAM therapies can be othered in relation to biomedicine. This view, however, was not always shared across the sample. Whilst some rejected the idea of using a particular non-orthodox therapy on the grounds of lack of scientific evidence for its utility, others did not. Our data show how sports medicine practitioners can subject non-orthodox therapies to clinical tests, trials and studies in their attempts to build scientific and clinical evidence bases for particular therapies and align their use with a scientific paradigm. Consequently, this leads to considerable blurring of

the conceptual boundaries between biomedicine and other forms of healing (Polich et al., 2010) across this particular landscape.

Nevertheless, our data show how therapeutic reasoning does not always hinge on scientific evidence, exhibiting greater complexity than that in practice. For example, we see how other forms of evidence or 'evidentiality' (Faulkner, 2009), such as the testimony of others are given importance in therapeutic reasoning of sports medicine practitioners, meaning that there is space for alternative epistemologies of healing to exist alongside biomedicine. Thus, our findings align with Malcom (2009) study of the case of concussion management where he argues that "medically based diagnostic criteria and treatment guidelines are replaced by understanding and definitions ... dominant in the sports subculture" (2009; 191). Our findings here also cohere with Willis and White's (2017) work on the politico-legal status of CAMs in Australia to some extent. They suggest that clinical legitimacy – so patients reporting they feel better – can bear more weight than EBM style 'evidence' on decisions around the legitimacy of particular therapies, which is often absent or lacking. While our data does not suggest replacement of one type of legitimacy for another, it does, like Willis and White's earlier observations, evidence the importance given to clinical judgement in clinical practice and the mixed role that EBM often plays in this process.

In summary, our data show how within the therapeutic landscape of elite sports medicine, therapeutic decision-making, reasoning and practice are medically, culturally and biographically shaped. We argue that the contemporary forms of CAM use within sports medicine are multiple, and characterised by complexity, heterogeneity, contingency and contestation.

5. Conclusion

Much theorising of medical pluralism, strangely perhaps given sociology's typical concern for 'alternatives', grassroots movements and so on, has taken a 'top-down' perspective based around vantage points of the state and Western biomedical dominance. More particularly, although there is a large literature in both anthropology and sociology on medical pluralism, apart from studies focusing on the co-existence of different modalities in given populations, other main concerns have been on socio-demographics of populations accessing 'alternative' medicine, on general populations'/patients' everyday medical practices, and the role of state regulation (Cant, 2004). In comparison, there are few studies of the complex details of therapeutic decision-making, therapeutic reasoning and therapeutic practice in settings and amongst users and patients where a plurality of therapies is available, nor amongst specific therapy user groups. Hence, contrary to the mainstream sociological approaches noted above, our study takes the vantage point of the therapeutic decision-makers set within wider the therapeutic landscapes they inhabit.

In conclusion, our analysis has shown how the dominant conceptual tools we have to hand offer only a partial explanation of contemporary CAM practices, centred on theorising relationships between biomedicine and others. While the conceptual typology of pluralism, integration and diversity/hybridisation captures the spectrum of CAM/orthodox relations, it does not engage with the dynamics of nonorthodox medicine use that we have illustrated. Thus, we argue that the typology of orthodox/nonorthodox relations should not be seen dichotomously but rather as a flexible, dynamic heuristic rather than as a categorisation tool for static institutional relationships. We have developed the concept of the 'therapeutic landscape' to enable us to take into account the complex dynamics of clinical practice. We suggest that in order to gain a more complete view of contemporary CAM practices, a wider conceptual framework such as this is required to account for how patients, professionals, knowledge, practices, techniques and technologies, global networks and communities of practice come together and interact in a specific locale and how this shifts as one or more of these elements change. We also suggest that future theorisation of medical

pluralism should move beyond the dichotomy of 'non-orthodox' defined in contrast to orthodox Western biomedicine, and embrace the diversities of practices, power relations and institutional setting that we have explored here.

CRedit authorship contribution statement

Catherine Coveney: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing. **Alex Faulkner:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing, Funding acquisition, Project administration. **Jonathan Gabe:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing, Funding acquisition. **Michael McNamee:** Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing, Funding acquisition.

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